STAINLESS STEEL SPECIFICATIONS

Type 301: Cr. 18, Ni. 8 (18-8 type), austenitic, hardenable by cold work only; t.s., 80-270,000 psi; y.s.30-240,000 psi; elongation in 2", 40-5%. In rods, bars, billets, wire, sheet, plate, strip and tubing. For parts requiring good corrosion resistance combined with high tensile strength and good ductility.

Type 302: Cr. 18, Ni. 8 (18-8 type), austenitic, hardenable by cold work only; t.s. 80-250,000 psi; y.s. 30-225,000 psi; elongation in 2", 60-5%; fair machinability excellent cold forming and welding properties. Furnished in sheet, strip, plate, bar, rod, forging billets and tube rounds, tubing, cold drawn shapes and structural shapes. For parts in acid handling food and dairy equipment; shafting , bearing plates, heat exchanger tubes, hydraulic tubing, piston rods, plungers, etc.

Type 303: Cr. 18, Ni. 8 (18-8 type), austenitic, hardenable by cold work only; t.s., 80-200,000 psi; y.s. 30-135,000 psi; elong. in 2", 55-10% good machinability; fair cold forming and welding properties. In sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn and structural shapes. For working parts in pumps and valves which must resist corrosion; screw machine parts requiring strength, good corrosion resistance.

Type 304: Cr. 18, Ni. 8 (18-8 type), austenitic, hardenable by cold work only; t.s., 85-250,000 psi; y.s., 30-225,000 psi; elongation in 2", 60-5%; slightly better corrosion resistance than Type 302. Furnished in rods, bars, billets, wire, sheet, plate strip, tubing and castings. For parts in chemical equipment such as shafting, bearing plates, heat exchanger tubes, etc.

Type 309: Cr. 25, Ni. 12 (25-12 type), austenitic, hardenable by cold work only; t.s., 95-190,000 psi; y.s. 45-165,000 psi; elong. in 2 inches, 50-5%; resists scaling to 2000°F, fair machinability, good cold C forming properties, excellent weldability. Furnished in sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn shapes and structural shapes. For parts that must operate continuously at high temperatures; oil burner parts, furnace parts, heat exchangers, air heaters, battle plates, etc.

Type 310: Cr. 25, Ni. 20(25-20 type), austenitic, hardenable by cold work only, t.s., annealed, 70-155,000 psi: elong. in 2", 55-5%; good weldability, drawing, stamping properties; fair machinability. In sheet, strip, plate, bar, rod, forging billet, tube rounds, tubing, cold drawn, structural shapes. For parts subject to intermittent heating and cooling; oil burner parts, heat exchangers; dye house, paper mill, chemical equipment.

Type 316: Cr. 18, Ni. 12, No. 3 (18-12-3 type), austenitic, hardenable by cold work only, t.s., 80-170,000 psi; y.s., 35-150,000 psi; elong. in 2", 55-5% fair machinability; excellent welding, cold forming properties. Best creep strength at high temp. and best corrosion resistance of all grades. In sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn and structural shapes.

Type 321: Cr. 18, Ni. 8, Ti. 4 x C min.: austenitic, hardenable by cold work only; t.s., 80-170,000 psi; y.s., 30-145,000 psi; elong. in 2", 55-5%; fair machinability, excellent welding, cold forming properties. In sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn shapes, structural shapes. For welded parts not annealed after welding or which operate at 800-1200°F; aircraft engine exhaust rings, flanges, etc.

Type 347: Cr. 18, Ni. 8, Cr 8 x C min.: austenitic, hardenable by cold work only; t.s., 80-170,000 psi; y.s., 30-150,000 psi; elong. in 2", 50-5%; fair machinability, excellent welding, cold forming properties. In sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn shapes and structural shapes. For welded parts not annealed after welding or which operate at 800-1200°F; aircraft engine exhaust rings, Ranges, etc.

Type 410: Cr. 12 (straight chromium type), hardenable by heat treatment; t.s., 60-180,000 psi; 30-160,000 psi; elong. in 2", 30-15%; good machinability, cold forming properties: good welding properties when annealed; most popular forging grade. In sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn and structural shapes. Used where corrosion not severe, for bolts, nuts, shafting turbine blading, valve trim, heat-treated parts; where hardness, toughness, desired.

Type 416: Cr. 12 (straight chromium type with sulphur or selenium added); excellent machinability; t.s., 70-170,000 psi; y.s., 4-140,000 psi; elong. in 2 ", 30-10%; fair cold forming properties, fair corrosion resistance. In bar, rod, forging billets, wire, cold drawn shapes. For mass production machined parts; Carburetor, instrument and electrical parts; screw machine parts.

Type 420: Cr. 13, C. 35; a widely used stainless cutlery steel. In the hardened and tempered condition, it combines an adequate hardness and cutting edge with good flexibility. It retains a bright polished finish and can be hardened to Rockwell C 55. Maximum corrosion resistance is obtained in the hardened condition.

Type 420F: Cr. 13, C. 35; free machining; has sulphur intentionally added to the base Type 420 analysis to make it easier to machine, grind and polish. Type 420°F has practically the same mechanical hardness, and corrosion resisting properties as Type 420.

Type 430: Cr. 17 (straight chromium type), non-hardenable by heat treatment; resists scaling to 1500°F; excellent cold heading properties, excellent machinability; does not discolor in atmosphere. t.s., 60-85,000 psi; y.s. 35-55,000 psi; elongation in 2", 35-20%. Furnished in sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn shapes and structural shapes. For press plates, oil burner parts, screw machine parts, trim for automobiles such as body moldings, hub caps, finishing washers, gas tank caps, etc.; also trim for appliances.

Type 430F: Cr. 17 with 0.07 S. or Se.; straight chromium free machining type, non-hardenable by heat treatment; t.s., 60-85,000 psi; 35-55,000 psi; elong. in 2", 25-10%; excellent machinability, fair cold forming properties. In forging billets, hot-rolled and cold-finished bars, wire and polished shafting. Particularly suitable for parts requiring considerable machining and only moderate corrosion resistance; screw machine parts.

Type 431: Cr. 16, Ni. 2 (straight chromium type), hardenable by heat treatment; t.s., 110-200,000 psi; 80-150,000 psi; elongation in 2", 20-15%; good machinability; fair cold forming properties; resists scaling to 1500°F. Best corrosion resistance of all hardenable stainless steels. Furnished in sheet, strip, plate, bar, rod, forging billets, tube rounds, tubing, cold drawn shapes, structural shapes. For parts requiring excellent physical properties coupled with high corrosion resistance.

Type 440 C and 440 A, B and C: Cr. 17, C 1.00 (straight chromium type), hardenable by heat treatment; t.s., 110-285,000 psi; 60-275,000 psi; elong. in 2", 15-21%; fair machinability, cold forming properties. Types A, B, same analysis except for lower carbon content: less hardenable; Type F, free machining. In sheet, strip, plate, bar, rod, forging billets, tube round tubing, cold drawn and structural shapes; needle, ball check valves; ball bearings, scissors, rules, cutlery, etc.

Type 501 and 502: Type 501, 4/6 Cr. plus Mo. over. 10 C. Type 502, 4/6 Cr. plus Mo., over. 10 C. maximum. Both types are recommended for use in the petroleum industry. In refinery equipment, particularly where sour crudes are encountered a life of four to ten times that of mild steel is not uncommon. These alloys are suitable for use at slightly elevated temperature, and are more resistant to scaling or oxidation than is mild steel. Scaling temperature about 1150° Fahrenheit.